## *Stantec* Analytical Validation Checklist          Report No. ATE86

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|---|---|
| Project Name: Amtrak North Yard | Project Number: 213402048 |
| Validator: Linda Goad | Laboratory: Eurofins/Lancaster Laboratory |
| Date Validated: 11/21/2018 | Laboratory Project Number: 1813967 |
| Sample Start-End Date: 6/15/2017 | Laboratory Report Date: 7/13/2017 |

Parameters Validated:

Polychlorinated Biphenyls (PCBs) by EPA SW-846 3550B/8082 – soil matrix

Percent Solids by SM 2540 G-1997

Samples Validated:

B-4(2.0-2.3), LLI # 9051357

B-4(2.5-2.8), LLI # 9051358

B-4(3.0-3.3), LLI # 9051359

B-4(3.5-3.8), LLI # 9051360

B-4(4.0-4.3), LLI # 9051361

B-4(4.5-4.8), LLI # 9051362

B-4(5.0-5.3), LLI # 9051363

B-4(5.5-5.8), LLI # 9051364

DUP-17, LLI # 9051365

B-4(6.5-6.8), LLI # 9051366

B-4(6.5-6.8)MS, LLI # 9051367

B-4(6.5-6.8)MSD, LLI # 9051368

B-4(6.0-6.3), LLI # 9051369

A-4(0.0-0.3), LLI # 9051370

A-4(0.5-0.8), LLI # 9051371

A-4(1.0-1.3), LLI # 9051372

A-4(1.5-1.8), LLI # 9051373

A-4(2.0-2.3), LLI # 9051374

A-4(2.5-2.8), LLI # 9051375

A-4(3.0-3.3), LLI # 9051376

### VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

**U**     The analyte was analyzed for, but not detected above the reported sample quantitation limit.

**J**     The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

**J+**     Result is estimated quantity but the result may be biased high.

**J-**     Result is estimated quantity but the result may be biased low.

**UJ**     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

**NJ**     The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

**B**    The analyte was detected in the method, field, and/or trip blank.

**R**     The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

| | Yes | No |
|---|---|---|
| 1.   Were all the analyses requested for the samples submitted with each COC completed by the lab? | **X** | |

| Comments: | | |
|---|---|---|

| 2. Did the laboratory identify any non-conformances related to the analytical result? | Yes **X** | No |
|---|---|---|
| Comments:<br>The laboratory noted that there were surrogate and MS/MSD recovery problems for PCBs. See Items 10 and 12 below for details. | | |

| 3. Were sample Chain-of-Custody forms complete? | Yes X | No |
|---|---|---|
| Comments:<br>` | | |

| 4. Were samples received in good condition and at the appropriate temperature? | Yes **X** | No |
|---|---|---|
| Comments:<br>Based on the laboratory sample receipt form, the samples were received by the laboratory without custody seals. | | |

| 5. Were sample holding times met? | Yes **X** | No |
|---|---|---|
| Comments: | | |

| 6. Were correct concentration units reported? | Yes **X** | No |
|---|---|---|
| Comments: | | |

| 7. Were detections found in laboratory blank samples? | | Yes | No **X** |
|---|---|---|---|
| Comments: | | | |

| 8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples? | NA **X** | Yes | No |
|---|---|---|---|
| Comments:<br>No field blanks were submitted with this sample delivery group. | | | |

| 9. Were instrument calibrations within method criteria? | NA **X** | Yes | No |
|---|---|---|---|
| Comments:<br>Not Applicable, Level II data validation. | | | |

| 10. Were surrogate recoveries within control limits? | | Yes | No **X** |
|---|---|---|---|

| Comments: |
|---|
| PCBs:  Recovery of the surrogates tetrachloro-m-xylene (TCX) and decachlorobiphenyl (DCB) were less than the Delaware Department of Natural Resources (DNREC) Standard Operating Procedures for Chemical Analytical Programs Under the Hazardous Substances Cleanup Act (SOPCAP, Feb. 26, 2015) control limits in sample A-4(0.0-0.3)MSD.  Surrogate recoveries were within control limits for the parent sample, so no data were qualified. |

| | | Yes | No |
|---|---|---|---|
| 11.   Were laboratory control sample(s) (LCS/LCSD) sample recoveries within control limits? | | **X** | |

| Comments: |
|---|
| |

| | NA | Yes | No |
|---|---|---|---|
| 12.   Were matrix spike (MS/MSD) recoveries within control limits? | | | **X** |

| Comments: |
|---|
| The sample B-4(6.5-6.8)  was analyzed as the site-specific MS/MSD for PCBs. The %Rs for PCB-1016 and PCB-1260 were within control limits.  The sample A-4(0.0-0.3) was also analyzed as a site-specific MS/MSD for PCBs. The %Rs for PCB-1260 were outside the control limits of 29-135% published in the NFG in the MS (-5%) and MSD (-33%). PCB-1260 was detected in the parent sample and was qualified J (estimated). |
| Reason code: MS |

| | | Yes | No |
|---|---|---|---|
| 13.   Were RPDs within control limits? | | | **X** |

| Comments: |
|---|
| PCBs: The RPD for the MS/MSD was outside the control limits published in the NFG  for PCB-1016 (63%) and PCB-1260 (41%). PCB-1016 was not detected in the parent sample and not qualified.  PCB-1260 was detected in the parent sample and was qualified J (estimated). |
| Reason code:  MS/SD |

| | | Yes | No |
|---|---|---|---|
| 14.   Were dilutions required on any samples? | | | **X** |

| Comments: |
|---|
| |

| | NA | Yes | No |
|---|---|---|---|
| 15.   Were Tentatively Identified Compounds (TIC) present? | **X** | | |

| Comments: TIC not requested. |
|---|

| | NA | Yes | No |
|---|---|---|---|
| 16.   Were organic system performance criteria met? | **X** | | |

| Comments: Not Applicable, Level II data validation. |
|---|

| | NA | Yes | No |
|---|---|---|---|
| 17.   Were GC/MS internal standards within method criteria? | **X** | | |

| Comments:  Not Applicable, Level II data validation. |
|---|

| | NA | Yes | No |
|---|---|---|---|
| 18.   Were inorganic system performance criteria met? | **X** | | |

| Comments: |
|---|
| |

| 19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. | | Yes **X** | No |
|---|---|---|---|
| **Primary Sample ID** | **Duplicate Sample ID** | | |
| B-4(6.0-6.3) for PCBs | DUP-17 | | |

| Comments: |
|---|
| PCBs: PCBs were not detected in either the primary or the field duplicate sample. |

| 20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results? | Yes **X** | No | Initials KEF |
|---|---|---|---|

| Comments: |
|---|

| 21. Other? | Yes | No **X** |
|---|---|---|

| Comments: |
|---|

| **PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT** |
|---|

| Precision: | Acceptable X | Unacceptable | Initials LEG |
|---|---|---|---|
| Comments: | | | |
| Sensitivity: | Acceptable X | Unacceptable | Initials LEG |
| Comments: | | | |
| Accuracy: | Acceptable X | Unacceptable | Initials LEG |
| Comments: | | | |
| Representativeness: | Acceptable X | Unacceptable | Initials LEG |
| Comments: | | | |
| Method Compliance: | Acceptable X | Unacceptable | Initials LEG |
| Comments: | | | |
| Completeness: | Acceptable X | Unacceptable | Initials LEG |
| Comments: | | | |